



Stripping of glidewire - A rare intraoperative complication of Percutaneous Nephrolithotomy[☆]

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ABSTRACT

Percutaneous nephrolithotomy is the standard procedure used to treat nephrolithiasis. Glidewires play a pivotal role in the smooth conduction of the procedure. Rough handling of glidewires and other accessories can lead to their fragmentation or stripping thus complicating the procedure. These foreign bodies can get easily lost in the retroperitoneum and are difficult to retrieve. We present a case of stripping of glidewire during percutaneous nephrolithotomy and the procedure to retrieve it percutaneously under fluoroscopic guidance.

1. Introduction

The prevalence of nephrolithiasis has been on rise worldwide and the Percutaneous Nephrolithotomy (PCNL) has provided a solution to any type of kidney stone.¹ Although less invasive procedure, complications are known to occur during PCNL. Most of urologists are well versed with the predictable complications of PCNL like bleeding, surrounding organ injury, collecting system injury, sepsis, stricture formation and nephrocutaneous fistula.² Many unusual complications can occur during procedure that can test the intellect and patience of the surgeon. We report stripping of glide wire during PCNL, a rare complication, and procedure to remove it percutaneously.

2. Case report

A 32 year old male underwent PCNL for renal pelvic calculus extending into the middle calyx. A middle calyceal puncture was made by 18G initial puncture needle and 0.032 inch hydrophilic glidewire was passed through. The glidewire could not be safely parked into the pelvicalyceal system (PCS) because of impacted middle calyceal calculus. After repeated failed attempts to pass the guide wire into the collecting system, guide wire was removed with puncture needle in place. During removal the jacket of the glidewire got stripped and lost into the renal parenchyma. Another calyceal puncture was made and tract dilated and stone was removed. There was no endoscopic trace of the stripped glide

wire in the PCS, though it was visible under fluoroscopy. Every calyx was searched but the stripped wire could not be identified. Procedure being carried under spinal anesthesia and a lot of time spent on searching the stripped glidewire, a DJ stent and nephrostomy tube was placed and procedure abandoned. Post operative X ray was showing the stripped glidewire coiled in the renal area (Fig. 1). A non contrast CT scan revealed the stripped glidewire in the renal parenchyma near the middle calyx. After two days patient was again taken to Operation Theater after proper planning to remove the residual glidewire. Under fluoroscopic guidance the puncture was made directly on the stripped wire (Fig. 2). A new glidewire was placed into the PCS under fluoroscopic guidance. Tract was dilated to 12 Fr and 8.5 Fr ureteroscope was passed through the sheath. The stripped wire was identified and removed intact (Fig. 3). Postoperative period was uneventful.

3. Discussion

PCNL being standard treatment for large size renal calculi also promises the ultimate solution to renal calculi refractory to other treatment modalities like extracorporeal shockwave lithotripsy in hard stones, lower pole stones with non feasible calyceal anatomy and stones in anatomically abnormal kidneys.

Although being less invasive procedure, complications do occur in PCNL. The commonly occurring complications of PCNL are bleeding, surrounding organ injury, pelvicalyceal system perforation, sepsis etc.³

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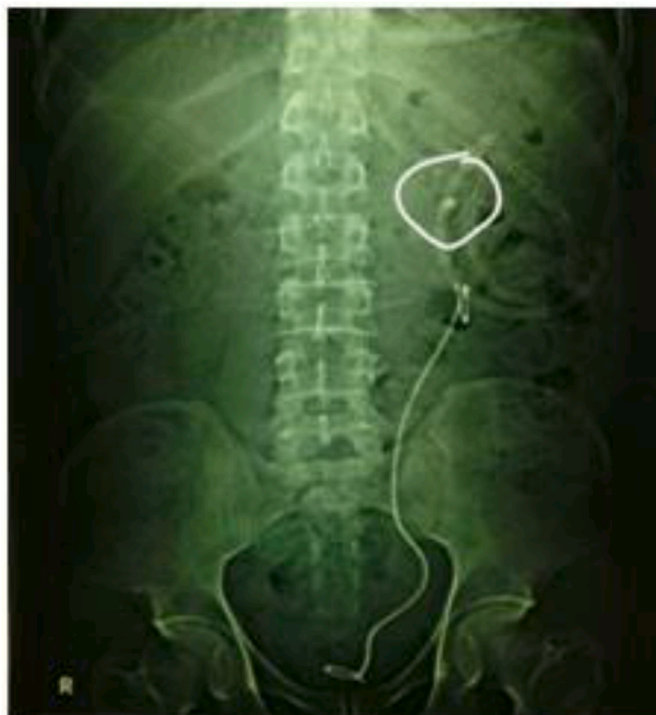


Fig. 1. X ray KUB showing coiled stripped glidewire fragment (white circle).

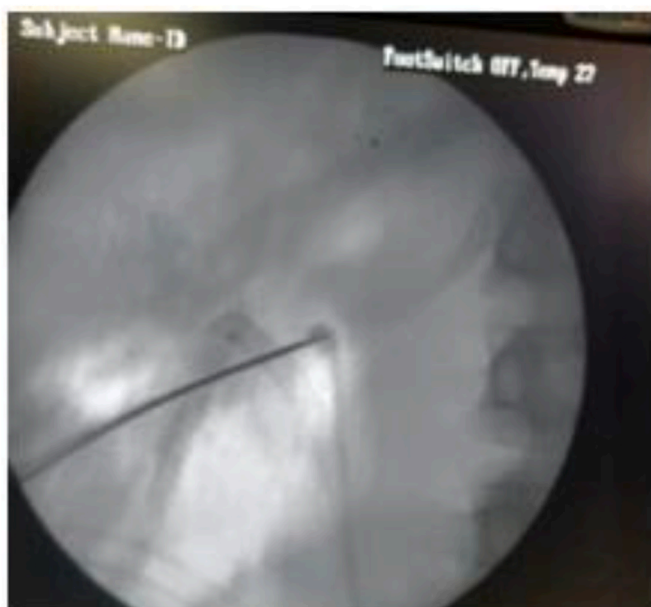


Fig. 2. Fluoroscopic puncture made directly on the glidewire fragment.

Most of the urologists who perform PCNL routinely are familiar with these complications. They are mostly easy to recognize and have defined management protocol. Difficulty arises when an unusual complication occurs because the surgeon is not prepared for the same. These rare complications are difficult to recognize and manage. They usually test the patience and intellect of the surgeon. We faced a rare complication of stripping of glidewire during PCNL. Although it was recognized intra-operatively, but we were not prepared to rectify it instantly. Since the procedure was being carried under spinal anesthesia and lot of time already spent on searching the stripped fragment, anesthetic effect was wearing and it was decided to conclude the procedure.



Fig. 3. Glidewire jacket removed intact.

The Terumo hydrophilic Glidewire we use consists of super-elastic nitinol alloy core for optimal performance and kink resistance. Tungsten-infused polyurethane jacket provides superior tip and wire radiopacity.⁴ When coiled guide wire is pulled forcibly, the jacket may get stripped from the nitinol core by the edge of the puncture needle. Attempts to localize the stripped glidewire endoscopically failed since the fragment was lost in the renal parenchyma. Such a fragment may even be difficult to identify in open surgery. Already exhausted by the attempts to identify the lost glidewire and prolonged operative time, procedure was abandoned with the aim of coming back after proper planning. The stripped glidewire was targeted under fluoroscopic guidance and small tract was carefully dilated upto the coiled jacket and removed intact under vision.

Glidewires and all accessories should be carefully used during endourologic procedures. Glidewire should not be removed forcibly through the puncture needle to avoid stripping. All accessories should be properly examined before and after the procedure to recognize any lost part. Stripped glidewire fragments can be safely removed percutaneously under fluoroscopic guidance.

List of supporting information

- The study has been approved by the institution ethical committee with protocol no. IEC/CSSH protocol #EC221/2021.
- Informed consent has been taken from the patient.
- Registry and registration number of study/trial –N/A

Declaration of competing interest

None.

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None.

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